Re-introducing Conceptual and Detailed Planning: Differentiating Between Decision Making and Problem Identification

A Monograph

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Since its introduction, Army Design Methodology (ADM) has met resistance from senior military leaders. This monograph researches the question why ADM faces resistance among senior Army officers. The resistance to integrating ADM within the Army originates from the historical reliance on the Military Decision-Making Process (MDMP) and its past success. The research conducted in this monograph leads the author to believe a major reason for this resistance is that officers are confused about what MDMP does and what ADM does. MDMP provides a decision-making tool. ADM provides a problem identification tool. ADM as a problem identification tool utilizes conceptual thought to define problems. Defining problems creates structure to allow decision-making and detailed planning. Confusion about ADM results from not understanding the value of conceptual thought in problem identification to facilitate solving ill-structured problems. An integrated planning approach must consist of both detailed planning and conceptual thought. Both well-structured and ill-structured problems benefit from an integrated planning approach. This author concludes that the addition of a simplified "Define Step" within MDMP would facilitate the integration of conceptual thinking with detailed planning. A define step assimilates the most significant aspect of ADM, the ability to successfully define or frame a problem. The monograph introduces the idea of a reformatted version of MDMP with a simplified conceptual design step, called "define," based on the model of the Six Sigma Methodology. Six Sigma problem solving and improvement planning methodologies apply to both well-structured and ill-structured problems.

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Abstract

RE-INTRODUCING CONCEPTUAL AND DETAILED PLANNING: DIFFERENTIATING BETWEEN DECISION-MAKING TOOLS AND PROBLEM IDENTIFICATION TOOLS. by MAJ Sean M Cooney, 49 pages.

Since its introduction, Army Design Methodology (ADM) has met resistance from senior military leaders. This monograph researches the question why ADM faces resistance among senior Army officers. The resistance to integrating ADM within the Army originates from the historical reliance on the Military Decision-Making Process (MDMP) and its past success. The research conducted in this monograph leads the author to believe a major reason for this resistance is that officers are confused about what MDMP does and what ADM does. MDMP provides a decision-making tool. ADM provides a problem identification tool. ADM as a problem identification tool utilizes conceptual thought to define problems. Defining problems creates structure to allow decision-making and detailed planning. Confusion about ADM results from not understanding the value of conceptual thought in problem identification to facilitate solving ill-structured problems. An integrated planning approach must consist of both detailed planning and conceptual thought. Both well-structured and ill-structured problems benefit from an integrated planning approach.

This author concludes that the addition of a simplified "Define Step" within MDMP would facilitate the integration of conceptual thinking with detailed planning. A define step assimilates the most significant aspect of ADM, the ability to successfully define or frame a problem. The monograph introduces the idea of a reformatted version of MDMP with a simplified conceptual design step, called "define," based on the model of the Six Sigma Methodology. Six Sigma problem solving and improvement planning methodologies apply to both well-structured and ill-structured problems.

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Acronym Page

ADM   Army Design Methodology

ARI   Army Research Institute

COG   Center of Gravity

DMAIC   Define, Measure, Analyze, Improve, Control

EBO   Effects Based Operations

HQ   Headquarters

IPB   Intelligence Preparation of the Battlefield

JFCOM   Joint Forces Command

MDMP   Military Decision Making Process

MPP   Military Planning Process

NTC   National Training Center

OEF   Operation Enduring Freedom

OIF   Operation Iraqi Freedom

SOD   Systemic Operational Design

Introduction

The Military Decision-making Process (MDMP) provides a successful methodology to conduct detailed planning for the Army. Its past success comes from the generally structured and linear problem format that facilitates empirical analysis of well-structured problems. The conventional style of warfare indicative of Airland Battle doctrine represents the majority of the well-structured problems that MDMP facilitates. Recent United States (US) military experiences in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) demonstrate an increasing number of ill-structured problems the US military faces. Counterinsurgency operations, nation building, socio-economic development, stabilization operations, governance, and capacity building comprise a plethora of ill-structured problems for which the US military currently needs to plan. Operational planners need to understand the use of both decision-making tools and problem identification tools. Operational planners can expect to encounter both well-structured and ill-structured problems in the future. Operational planners generally utilize decision-making tools for well-structured problems. Ill-structured problems require both decision-making tools and problem identification tools. MDMP facilitates detailed planning for well-structured problems. Army Design Methodology (ADM) facilitates conceptual planning for ill-structured problems.

Ill-structured problems require more than decision-making. Correctly defining ill-structured problems using ADM creates appropriate conditions to utilize MDMP for decision-making and detailed planning. Since its introduction, ADM has met resistance from senior military leaders. This monograph researches the question why ADM faces resistance among senior Army officers. The resistance to integrate ADM within the Army originates from the historical reliance on MDMP and its past success. The research conducted in this monograph leads the author to believe a major reason for this resistance is that officers are confused about how to integrate MDMP and ADM to solve ill-structured problems, as opposed to solving well-structured problems. MDMP provides a decision-making tool for solving well-structured problems. ADM provides a problem identification tool to complement MDMP for solving ill-

structured problems. ADM as a problem identification tool utilizes conceptual thought to define problems. Defining problems creates structure to allow decision-making and detailed planning. Confusion about ADM results from not understanding the value of problem identification to facilitate solving ill-structured problems. An integrated planning approach must consist of both problem identification and decision-making. Ill-structured problems require problem identification prior to decision-making. United States (US) Army Doctrine recognizes in the March 2010 edition of Field Manual (FM) 5-0, *The Operations Process*, that effective military planning contains both a conceptual and detailed component.[1] While MDMP generally provides a sufficient resource to conduct detailed planning for well-structured problems, ill-structured problems require the integration of ADM.

Section one of this monograph begins with a review of the origin of ADM in Army doctrine. This section describes both the development and need to conduct problem identification in doctrine. The use of critical reasoning provides an initial technique in problem identification within MDMP. This use of critical reasoning for problem identification leads to a discussion on the applicability of center of gravity (COG). This discussion addresses a belief that reliance on COG attempts to simplify ill-structured problems to support MDMP's use. Solutions to ill-structured problems require more than a total reliance on COG.

The second section of this monograph defines the difference between well-structured problems and ill-structured problems. This section establishes that the nature of military planning reflects problem solving. Understanding whether or not a specific problem is well-structured or ill-structured determines the applicability of problem solving tools. Ill-structured problems require a problem identification tool to facilitate planning. A problem identification tool enables a commander and staff to visualize an ill-structured problem, or environment, and create operational plans to successfully address them. A comparison to Henri Jomini's view of war describing well-structured problems with Carl Von

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[1] FM 5-0: *The Operations Process* (March 2010), 3-1.

Clausewitz's theories of war describing ill-structured problems validates the dual nature of military planning. The US Military understands war through the lenses of both Jomini and Clausewitz. Jomini represented as MDMP and Clausewitz represented as ADM provide an analogy for opposing methodologies that combine for an overall greater utility and understanding.

The third section of the paper focuses on the academic analysis of what constitutes a decision-making tool and what constitutes a problem identification tool. James G. March defines decision-making simply as "interpreting action as rational choice."[2] The cognitive process that determines a rational choice to select a single option from various possible options characterizes decision-making. A decision-making tool provides a method for empirical analysis in the development and selection of options. Within a military context, options equate to courses of action developed during detailed planning, the overall purpose of MDMP. Recognition of MDMP as a decision-making tool with limitations justifies the need for a problem identification tool when confronted with ill-structured problems.

Resistance to ADM, the fourth section of this paper, comprises two key arguments relating back to confusion about what MDMP does and what ADM does. The first argument originates from the thought that MDMP already provides a sufficient or 'good enough' tool for planning. The second argument maintains ADM does not apply to what the Army does. Previous critique and resistance to Effects Based Operations (EBO) and Systemic Operational Design (SOD) provide similar conceptual thought based methodologies where the benefits of design for problem identification went unrealized.

This monograph differentiates between what constitutes a decision-making tool and a problem identification tool by the addition of a conceptual component of design to define a problem. This author concludes that the addition of a simplified "Define Step" within MDMP would facilitate the integration of conceptual thinking with detailed planning. A define step assimilates the most significant aspect of ADM, the ability to successfully define or frame a problem. The monograph introduces the idea of a reformatted

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[2] James G. March, *A Primer on Decision-making* (New York: The Free Press, 1994), 1.

version of MDMP with a simplified conceptual design step, called "define," based on the model of the

Six Sigma DMAIC (Define, Measure, Analyze, Improve, Control) Methodology.[3] Six Sigma DMAIC

problem solving and improvement planning methodologies apply to both well-structured and ill-

structured problems. Corporate Six Sigma black belts utilize Six Sigma DMAIC methodology across both

the manufacturing and service industries. The title "black belt" denotes a unique position within civilian

industry that utilizes Six Sigma DMAIC methodology to conduct problem solving. The problems black

belts solve using Six Sigma DMAIC's define step highlight the positive impact of problem identification.

Black belts translate problem solving into business planning using Six Sigma DMAIC methodology.

Utilizing the model of the Six Sigma DMAIC methodology, business planners integrate a conceptual step

called *define*. This author intends to express the potential for a Military Planning Process (MPP) to

transform and evolve MDMP. The transformation of MDMP with an integrated define step creates a

proposed MPP methodology that allows military planners to solve both well-structured and ill-structured

problems with a single integrated methodology.

Origin of ADM in Doctrine

Before beginning an analysis of the arguments associated with MDMP's limitations as a decision-

making tool and the resistance to ADM, the reader must first understand the evolution of ADM in

doctrine. Army Doctrinal Reference Publication (ADRP) 5-0, *The Operations Process*, includes ADM.

ADM's inclusion seeks to integrate problem identification with decision-making. Problem identification

and decision-making best solve ill-structured problems together. However, the introduction of ADM falls

short of integrating problem identification within the traditional planning process by failing to place

problem identification steps within MDMP. Separating ADM from the operations process creates the

appearance that ADM and MDMP exist in a mutually exclusive context, rather than interdependent

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[3] Craig Cygi, Neil DeCarlo, and Bruce Williams, *Six Sigma for Dummies* (Hoboken:Wiley Publishing, 2005).

methodologies that transform decision-making into problem identification for ill-structured problems.

The previous edition of FM 5-0 *The Operations Process* devoted Chapter 3 to discussing ADM. FM 5-0 defined design as a "methodology for applying critical and creative thinking to understand, visualize and describe complex, ill-structured problems and develop approaches to solve them."[4] To successfully integrate design methodology into MDMP, the Army must reevaluate the intent and purpose of MDMP. MDMP currently provides a format to evaluate empirical data and create a number of possible choices from which a commander makes a decision. It lacks the requirement to define "the problem" that best represents the end state described by the higher command's mission statement or commander's intent. Defining the problem in the broadest possible terms allows the maximum use of innovation, adaptability, and creativity which all represent characteristics of conceptual thought for problem-identification in a holistic sense.

The 2005 version of FM 5-0, *The Operations Process*, focuses attention and discussion on MDMP and TLP as the primary tools to support the operations process.[5] The manual discusses and highlights the importance of critical thinking, but mention of conceptual thought within the design methodology is absent. The best critique and discussion of the critical thinking aspects mentioned within FM 5-0 lie in the handbook distributed by the Department of Joint, Interagency, and Multinational Operations within the US Army Command and General Staff College (CGSC). The handbook, *Campaign Planning: Tools of the Trade*, written by Dr. Jack D. Kem in 2009, attempts to fill the void of conceptual thinking for problem identification within the 2005 edition of FM 5-0. This handbook advocates the use of critical reasoning techniques as a problem identification tool. Kem recognizes that campaign planning at the operational level of war "traditionally thought of as a linear process with distinct phases and

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[4] FM 5-0: *The Operations Process* (March 2010), 3-1.

[5] Ibid, 4-1.

sequential actions is enormously more complex today."[6] Dempsey echoed the same sentiment in the foreword of the 2010 edition of FM 5-0. Dempsey stated that the operations process must "highlight the importance of understanding complex problems" and that only a "critical and creative thinking methodology helps to understand the environment, analyze problems, and consider potential approaches."[7] Dempsey described both critical and creative thinking in a manner similar to Kem's view. Both recognize the need for a "critical and creative" component in problem identification for ill-structured problems. Kem recognizes that MDMP's greatest benefit as a true problem solving model, similar to the scientific method, begins with defining the problem. Kem advocates defining the problem as the first step in the process after receiving the mission. "Knowing precisely what the problem is provides a critical stepping stone to solving that problem."[8]

Mission analysis, the second step within MDMP, leads operational planners to accept a description of the problem based on the determination of a mission essential task. Kem recognizes the tendency of Army leaders to accept a problem statement determined through mission analysis stating, "commanders are so sure of themselves that they skip this step (defining the problem) and go directly to problem solving."[9] Kem further backs his assessment with research from the Army Research Institute (ARI) that analyzed the time commanders spent attempting to define ill-structured problems during scenario driven exercises. Exercises at the National Training Center (NTC) required conceptualization of ill-structured problems. ARI determined that "courses of action commanders develop addresses only the immediate problems at hand, but not the critical problem."[10] This phenomenon demonstrates a lack of time focused on problem identification.

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[6] Jack D. Kem, *Campaign Planning: Tools of the Trade* (Ft. Leavenworth, Kansas: U.S. Army Command and General Staff College, 2009),1.

[7] FM 5-0: *The Operations Process* (March 2010), foreword.

[8] Kem, *Campaign Planning: Tools of the Trade*, 5.

[9] Ibid, 5.

[10] Ibid, 6.

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Critical reasoning described by FM 22-100, *Military Leadership*, consists of "finding and identifying the real problem…requiring to sort through distracting and multiple problems to get to the real difficulty…and is an iterative process that goes beyond the initial understanding of the problem."[11] Kem pairs the concept of critical reasoning with creative thinking to determine that creative thinking follows critical reasoning as the technique or methodology to develop solutions. FM 6-22, *Army Leadership*, defines creative thinking as "using adaptive approaches (drawing from similar circumstances) or innovative approaches (coming up with a completely new idea).[12]

Changes in the 2010 edition of FM 5-0, as well as the ideas presented in the new ADRP 5-0, support Kem's view of defining a problem's importance through both critical and creative thinking. Kem emphasizes this idea through his discussion on the importance of COG. This author believes understanding the development and use of COG contributes to the phenomenon of why operational planners bypass the importance of defining problems and move quickly into developing courses of action. The ideas relating to COG derive from Carl von Clausewitz's theoretical discussion of how to defeat an enemy. Clausewitz believed that by recognizing where a "certain center of gravity develops, the hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed."[13] In choosing a COG, most practitioners of operational art follow Clausewitz's lead believing that "the defeat and destruction of the enemy's fighting force remains the best way to begin."[14] This simplistic utilization of COG insufficiently defines the problem and creates a belief that course of action development may begin. The courses of action developed invariably focus on a set of easily identifiable problems represented by enemy forces. This constitutes the view of planning based on well-

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[11] FM 22-100: *Army Leadership* (August 1999), 4-21.

[12] FM 6-22: *Army Leadership* (October 2006), 6-13

[13] Carl Von Clausewitz, *On War,* trans. Michael Howard and Peter Paret (Princeton, Princeton: Princeton University Press, 1989), 595-596.

[14] Ibid, 596.

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structured problems and pays little attention to the unique demands of ill-structured problems.

Utilizing COG to determine easily identifiable problems based on adversarial forces simplifies problem identification falsely creating well-structured problems. Creating well-structured problems may lead to initial operational success; however, initial operational success rarely translates into lasting success for ill-structured problems. Kem finds the "concept of the COG often used as the 'hub or movement' not particularly useful."[15] Contemplating and determining COG provides a way to "focus the staff and commanders on the all important task of identifying and understanding the problem – an example of critical reasoning" [16] A COG based on enemy forces may lead to a successful operation or campaign following detailed planning. However, the plan's success may be immaterial if it addresses an inconsequential problem. COG's manifested as enemy forces tend to produce erroneously defined problems in regards to ill-structured problems. The defeat of Saddam Hussein's forces and the Taliban during OIF and OEF support this.

Well-Structured and Ill-Structured Problems

Ill-structured problems do not possess textbook answers or solutions that the commander and staff generally agree upon. Ill-structured problems require a problem identification tool, like ADM, to define the problem and increase understanding. MDMP then provides a means to develop possible courses of action. Making the best decision on an appropriate course of action constitutes a function of experience and knowledge. These qualities derive from an individual's education or the ability of a planning lead to collaborate as part of a team. The mechanistic and linear process of MDMP facilitates decision-making for both individuals and teams. MDMP facilitates decision-making with a "methodology for identifying the problem, generating possible solutions, analyzing those solutions, comparing the

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[15] Kem, *Campaign Planning: Tools of the Trade*, 25.

[16] Ibid, 29.

solutions, and determining the best solution."[17] Problem identification requires more than understanding task and purpose through the receipt of mission. Understanding task and purpose demonstrates analysis of empirical data rather than conceptual or critical reasoning qualities to facilitate problem identification.

Adam Elkus, an associate editor at *Red Team Journal,* provides an example of a defense against a Soviet Division Tactical Group as a well-structured problem. Elkus utilizes this example in his article, *Operational Design: Promise and Problems,* to illustrate the effectiveness of a decision-making process for a well-structured problem. A defense against a Soviet Division Tactical Group requires careful analysis of known capabilities in accordance with doctrine. This analysis creates specific options enabling the creation of a defense plan that provides the most effective use of direct and indirect fires tied to the existing terrain. The lack of conceptual and critical reasoning qualities within this example characterizes a decision-making process based on a well-structured problem best suited for MDMP.

Elkus describes MDMP as linear and mechanistic, its characteristics best suited to well-structured problems such as an engineering problem or the defense against Soviet Division Tactical Group. Both a defensive plan and an engineering problem "possess a generally agreed upon solution that categorize them as well-structured problems."[18] MDMP lends itself to solving well-structured problems due to its linear and mechanistic qualities. Experience and education positively contribute to solving well-structured problems. Similarly, the impact of experience and education in the form of "lessons learned" adds to the collective wisdom that generates agreed upon tactical solutions. The greater the experience and depth of "lessons learned," the greater MDMP's applicability as a linear and mechanistic method for arriving at agreed upon tactical and operational solutions for well-structured problems.

Problem identification constitutes an entirely different set of actions from those included as part

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[17] McLamb, Joseph S. "Is It Time to Abandon the Military Decision-making Process?" *Military Review* Mar/Apr (2002): 98.

[18] Adam Elkus and Crispin Burke, "Operational Design: Promise and Problems," *Small Wars Journal,* (2010) 9. http://smallwarsjournal.com/jrnl/art/operational-design-promise-and-problems (accessed 20 April 2012)

of decision-making. Planning within a military context constitutes problem identification. LTC McLamb makes this fact very clear regarding combat operations stating, "Reduced to its lowest common denominator, combat is about problem solving. The problems are complex, often difficult to see in their entirety, and always complicated by innumerable factors like terrain, weather, technology, and morale. Regardless of the complexity, however, combat is simply a problem."[19] Planning also occurs outside of combat. The military conducts planning for administrative changes, logistical operations, and cultural transformations. All military planning, "the process commanders (and the staff, if available) translate the commander's visualization into a specific course of action for preparation and execution, focusing on the expected results," seeks to solve both well-structured and ill-structured problems.[20] Because well-structured problems generally have commonly agreed upon solutions based on lessons learned and doctrinal guidance, MDMP provides the best methodology to address them. The MDMP methodology fits in line with a Jominian view of "war in terms of an experiment with clear results derived from empirical means" and "categorizes warfare not as art but science with adherence to basic principles such as lines of operation and an emphasis on practical knowledge."[21] Jomini's emphasis on the empirical analysis of decision-making lacks the capacity to solve ill-structured problems, which Clausewitz's "central theme that war and the art of decision-making defied rote categorization and solutions" supports.[22]

The need to conduct planning for ill-structured problems requires an integrated planning process of ADM and MDMP as a "unitary framework that blends the two theorists and endeavors to bridge the gap in dialogue about the relationship between the Military Decision-Making Process and the Design

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[19] McLamb, "Is It Time to Abandon the Military Decision-making Process?" 98.

[20] *FM 5-0: The Operations Process* (March, 2010), Glossary 7.

[21] Christopher Otero, "Clausewitz and Jomini: A Discussion on Theory, MDMP, and Design in the Post OIF Army," *Small Wars Journal* (2011): 1. http://smallwarsjournal.com/jrnl/art/reflections-on-clausewitz-and-jomini-a-discussion-on-theory-mdmp-and-design-in-the-post-oif (accessed 20 April 2012)
[22] Ibid, 1.

Methodology." [23] ADM provides a means to facilitate problem solving when the problem at hand is ill-structured as opposed to the well-structured problems MDMP addresses independently. FM 3-0, *Operations,* defines planning as "the art and science of understanding a situation, envisioning a desired future, and laying out an operational approach to that future."[24] The MDMP process alone does not possess a conceptual component that provides for problem identification of ill-structured problems. ADM provides the problem identification tool that when paired with MDMP constitutes the optimal mix of Jomini and Clausewitz's ideas. This mix equates to military planning for both well-structured and ill-structured problems.

Planners must define ill-structured problems before they can develop a solution and agree upon a future operational approach. This author's definition of planning requires a definition of a problem, root cause, or desired end state prior to developing a future operational approach. This coincides with the purpose of design methodology as "a means for approximating complex problems that allows for meaningful action."[25] Planning that fails to achieve long term success indicates incorrectly identified problems.

Proponents of MDMP point to mission analysis, the second step of MDMP, as the time when analysis of the operational environment "exists to assist in defining a problem faced by commanders and staff. Defining of problems using mission analysis, results in inherent bias because the critical reasoning and analysis of factors follows the first step, "receive the mission." Receive the mission may not contain or articulate a correctly defined problem. This first step, generally delivers a pre-supposed problem definition in the form of a mission statement that bypasses a requirement for the commander and staff to utilize problem identification tools. This aspect of bias corresponds to the criticism Kem describes in the

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[23] Otero, "Clausewitz and Jomini: A Discussion on Theory, MDMP, and Design in the Post OIF Army," 1.

[24] FM 3-0: *Operations* (March 2010), 2-1.

[25] COL Wayne Grigsby, Dr. Scott Gorman, COL Jack Marr, LTC Joseph McLamb, Dr. Michael Stewart and Dr. Pete Schifferle. "Integrated Planning: The Operations Process, Design and the Military Decision-making Process," *Military Review* Vol XCI (2011): 30.

National Training Center example and the data highlighting the time commanders and staff spend identifying the problem. The absence of a problem identification tool eliminates the opportunity for the commander and staff to reflect on the factors, conditions, and root causes of the circumstances surrounding the conflict, instability, or environmental conditions.

When systematically considered prior to mission analysis, utilizing a problem identification tool, such as ADM, the operational planner stands a better chance at correctly identifying the problem. A correctly defined problem provides a road map for the pertinent data detailed planning requires during mission analysis. Interpreting data and the absence of data related to a correctly defined problem enhances mission analysis. Without a conceptual component for problem identification, MDMP exists solely as a decision-making tool. When applied to ill-structured problems this dynamic may lead to planning that lacks innovation, adaptation, and continuous learning. Most significantly, it creates the possibility that detailed planning addresses the wrong problem or an irrelevant problem.

Decision-Making Versus Problem Identification

Both decision-making, as seen in MDMP, and problem identification, as seen in ADM, possess unique characteristics. Decision-making differs from problem identification by the absence of creativity and reliance on analytical thinking to construct hierarchies. Decision-making also differs from problem identification by the practice of narrow framing. Understanding the unique characteristics of both decision-making and problem identification allows for the most effective application of decision-making in well-structured problems and the integration of problem identification with decision-making for ill-structured problems.

Herbert Simon pioneered efforts on the art of decision-making in his first doctrinal paper entitled "Administrative Behavior." Simon's work attempted to understand human behavior differentiated between decision-making and problem solving by establishing the relationships and qualities of both.

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Herbert Simon defined decision-making as a "natural phenomenon that could be studied by computer simulation, empirical analysis or laboratory experiment."[26]

Simon's true interest lay in researching and determining how human beings solve ill-structured problems, like puzzles. This research on problem solving, or planning from the military perspective, describes ADM. The military uses planning to solve tactical, operational and strategic problems. These three types of problems can be found as well-structured or ill-structured problems. If a puzzle illustrates problem solving for ADM, then a multiple-choice question best illustrates decision-making for MDMP. A puzzle requires defining the problem and desired end state. Multiple-choice questions provide the end state, but require careful analytical analysis of the choices and information provided to determine the correct solution. Simon's work provides a unique perspective for the discussion on MDMP. Without a true conceptual component, MDMP represents solely decision-making and contrasts sharply with ADM as problem solving because "when we study the process of design we discover that design is problem solving."[27]

Simon defined three steps to decision-making: 1) the identification and listing of all the alternatives, 2) the determination of all the consequences resulting from each of the alternatives, and 3) the comparison of the accuracy and efficiency of each of these sets of consequences.[28] Simon's steps for decision-making mirror that of MDMP used by operational planners. These three steps strongly relate to course of action development, course of action comparison, war-gaming, and course of action selection. Unlike a puzzle where the end state is undefined, options derived from MDMP consist purely of empirical analysis lacking creativity. Simon strongly believed "the problem was vague and ill defined so part of the

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[26]Armand Hatchuel, "Towards Design Theory and Expandable Rationality: The unfinished program of Herbert Simon," *Journal of Management and Governance* 5:3-4 (2002): 2.

[27] Hatchuel, "Towards Design Theory and Expandable Rationality: The Unfinished Program of Herbert Simon," 3.

[28] Herbert Simon, *Administrative Behavior* (New York: The Free Press :1976), 67.

task was to reformulate the problem itself."[29] This allows for creativity and conceptual thinking. MDMP without applying a conceptual component lacks the creativity characterizing the reformulating process of problem identification or planning for the military.

Thomas Saaty's Analytic Hierarchy Process (AHP) of decision-making provides a second example from which to understand MDMP solely as decision-making. AHP decision-makers define a situation by structuring it into a hierarchical level of details. A hierarchy level of detail organizes the criteria required to solve a problem in order of importance. MDMP, likewise, organizes criteria required to select a course of action in order of importance. These criteria consist of the factors considered relevant to solving a pre-supposed problem. The hierarchical graph depicts the relationships between the factors and assigns numerical values to those factors based on the overall impact, positive or negative, that they bear on the problem. MDMP utilizes a similar process during course of action selection step to provide an objective analysis of possible courses of action. A course of action comparison matrix presents the best possible course of action by demonstrating which criteria and courses of action correspond to the greatest numerical values. The course of action or hierarchy level of detail with the greatest numerical value indicate the best possible solution.

What makes AHP decision-making, as opposed to problem identification, comes from the fact that the AHP process delivers choices, or courses of action, directly originating from the pre-supposed problem. AHP then selects "the right" course of action utilizing criteria. Similar to a multiple-choice question, AHP begins with a pre-defined problem and choices, directly related to the initially perceived problem. However, AHP does not utilize a conceptual step to determine what may truly be the problem. The highest level of the AHP process constitutes the objective or problem. The lowest level of the AHP process constitutes the course of action for detailed planning. AHP compares directly to MDMP with the

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[29] Hatchuel, "Towards Design Theory and Expandable Rationality: The Unfinished Program of Herbert Simon," 3.

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initially received mission statement as the highest process and the courses of action for detailed planning

and selection as the lowest level. Analysis criteria fill the intermediate level of AHP similar to mission

analysis factors filling the intermediate steps of MDMP. AHP decisions result from "judging the relative

importance of all the elements and quantifying these judgments by assigning numbers."[30] MDMP

conducts a similar process with selection of course of action criteria. Course of action criteria receive

weighted numerical values to assist in selection within MDMP. Judgment plays a significant role in

determining the criteria for both AHP and the course of action comparison within MDMP.

In *How We Think*, scholar John Dewey understands criteria as "details" and describes them as

factors in decision-making where "we select the things that we hope or trust are cues to the meaning" and

become "those traits that are used as evidence in reaching a conclusion or forming a decision."[31] MDMP

exhibits this characteristic of using criteria as "details" to conduct decision-making. During MDMP's

course of action comparison step, planners select criteria describing the most desirable option. Common

examples of criteria describing the most desirable course of action are feasibility, completeness,

suitability, or simplicity. Decision-makers place these criteria in a course of action comparison matrix

with assigned values based on established priorities. The utilization of criteria to establish priorities for

selecting a course of action lacks creativity and conceptual thought and does not describe problem

identification. This utilization attempts to create an objective outcome with subjective elements of criteria

to form a decision.

James G. March provides an explanation of "framing" that illustrates the difference between

decision-making without a conceptual component and decision-making with a conceptual component. In

his book, *A Primer on Decision-making,* March states, "decisions are framed by beliefs that define the

problem to be addressed, the information that must be collected and the dimensions that must be

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[30] Thomas Saaty, *Decision-making for Leaders* (Belmont: Lifetime Learning Publications,1982),16.

[31] John Dewey*, How We Think* (New York: Prometheus Books, 1991), 104.

evaluated."[32] MDMP without a conceptual component reflects March's description of "framing." March defines framing as something that "focuses attention and simplifies analysis. They direct attention to different options and different preferences."[33] Information collected during mission analysis demonstrates framing. Facts, assumptions, specified tasks, implied tasks, constraints, and limitations, the components of mission analysis, demonstrate framing qualities. These pieces of information used to develop a detailed plan focus attention and simplify analysis on a pre-supposed problem provided by the mission statement. The information determined from mission analysis creates a narrow frame. Narrow frames provide symptoms associated with well-structured problems. Information that characterizes symptoms of a well-structured problem limits a frame's size and bypasses opportunities to collect information to define ill-structured problems. Cause and effect relationships, trending factors, and root causes provide examples of information that can assist in problem identification for ill-structured problems. The narrow frames created by the components of mission analysis neglect information that can assist in problem identification for ill-structured problems. The use of a problem identification tool expands the boundary of a problem frame by looking at factors other than the components of mission analysis. March advocates framing as a method for the process of decision-making because "decision makers adopt paradigms to tell themselves what perspective to take on a problem, what questions should be asked, and what technologies should be used to ask the questions."[34] Planners who focus attention and simplify underestimate the true gravity of ill-structured problems that require greater framing.

Framing, as a process, limits the available options for developing possible solutions or courses of action for detailed planning. Mission analysis components "seek to legitimize a consequential frame for considering decisions."[35] The components of mission analysis apply universally to well-structured

[32] March, *A Primer on Decision-making*, 14.

[33] Ibid, 14.

[34] Ibid, 14.

[35] Ibid, 14.

problems and assist in developing solutions for military planning. These components do not apply to all ill-structured problems and fail to universally provide solutions to ill-structured problems. Framing restricts decision-makers. Planners involved in problem solving who refrain from limiting their options ultimately maintain the opportunity for innovation and creativity by employing larger frameworks. These frameworks facilitate conceptual thinking. March makes the assumption "that a decision will be made in one way if it is framed as a (particular) problem."[36] Problems framed using MDMP as a methodology that does not include conceptual thinking will potentially result in limited and narrowly focused selection of possible decisions.

The following example of a mission statement illustrates how March's concept of framing corresponds to MDMP. A mission statement that delivers a tactical task to attrit, destroy, or neutralize narrows the options available to the operational planner. Narrowly focused mission statements eliminate the opportunity to identify or frame the problem. Limiting possible courses of action occurs when "decision makers typically frame problems narrowly rather than broadly."[37] By comparison problem-solvers maintain opportunity for creativity and innovation by maintaining the broadest possible frames.

MDMP Viewed as "Good Enough"

Continuing assumptions that US military forces will return to future conflicts characterized by well-structured tactical problems best solved by MDMP strongly contributes to the resistance of ADM. The US Army must retain skill and expertise in MDMP because, "however unfashionable at present, MDMP is a foundational element of conflict, past, present, and future."[38] The past success of MDMP as a

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[36] March, *A Primer on Decision-making*, 14.

[37] Ibid, 14.

[38] Elkus and Burke, "Operational Design: Promise and Problems," 9.

method for the "disciplined planning of operations through the construct of steps such as mission analysis and course of action development is part of what has guaranteed victory in engagements past and present."[39] This supports Adam Elkus' belief that MDMP provides a form of egalitarianism to the military planning process that ADM disrupts. Grigsby suggests a myth that "the design methodology is for the talented few while MDMP is for the rest of the Army," provides an excuse to continue using MDMP and avoid using ADM.[40] The egalitarianism aspect of MDMP ensures that "all who come to the staff can participate and provide valuable contributions to the success of the mission through the use of MDMP."[41]

The perceived comfort level MDMP provides in the absence of a "great man" explains the Army's reluctance to accept ADM.[42] Individuals resistant to ADM believe its complexity and difficulty require a great intellect to utilize and communicate through orders whereas "MDMP represents the egalitarianism of the US Army as it allows the planning and execution of military operations without the need for a singular military genius in the mind of the commander."[43]

McLamb recognizes the frustration officers and non-commissioned officers harbor towards the MDMP process in a 2002 Military Review article. McLamb articulates criticism of MDMP with comments from the field like "it's too burdensome," "too complex," and "simply too slow." McLamb then asks the question "is MDMP a viable method by which to solve today's staff problems, or is it time to find some other process?"[44] McLamb asks the question concerning the utility of MDMP because he

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[39] Elkus and Burke, "Operational Design: Promise and Problems," 11.

[40] Grigsby et al., "Integrated Planning: The Operations Process, Design and the Military Decision-making Process," 31.

[41] Gregory R. Ebner, "Scientific Optimism: Jomini and the US Army," US Army Professional Writing Collection, (2004): http://www.army.mil/professionalwriting/volumes/volume2/july_2004/7_04_2_pf.html (accessed 20 April 2012)

[42] Elkus and Burke, "Operational Design: Promise and Problems," 11.

[43] Ebner, "Scientific Optimism: Jomini and the US Army."

[44] McLamb, "Is It Time to Abandon the Military Decision-making Process?" 98.

attributes the shortcuts, omissions, and errors in MDMP application occurring throughout the force to this perception of difficulty. MDMP's complexity reduces a unit's ability to train and practice MDMP. McLamb notes, "the training level of the staff means there is rarely enough time to thoroughly and comprehensively apply MDMP."[45] Training MDMP already provides a sufficient challenge without the addition of design. McLamb points out the challenge of training MDMP acknowledging, "FM 101-5 recognizes that staffs must plan in time-constrained environments…and almost all of today's battalion and brigade staffs conduct tactical planning in a time-constrained environment. The training level of the staff means there is barely enough time to thoroughly and comprehensively apply MDMP."[46] It follows logically that military members would resist further expanding and complicating a planning process already abbreviated due to lack of proficiency and perception of complexity and burden.

COL John Marr took a different approach to explain resistance towards ADM. Marr attributes the lack of acceptance for ADM to the fact that "the concept of design was not thoroughly tested by the field prior to its inclusion in doctrine."[47] Marr equates this mistake to the experience the Army went through accepting Airland Battle Doctrine. Airland Battle doctrine followed a top-down approach from senior level officers' thoughts on how the Army would fight in the post-Vietnam era. In a similar manner, some view ADM as a byproduct of senior level officers' vision for the ill-structured problems of Afghanistan and Iraq. These ill-structured problems represent an expectation for future planning in the post 9-11 world. Individuals who believe MDMP will suffice for planning, take the view that defined end-states occur in ill-structured problems. Ill-structured problems rarely exhibit defined end-states. BG Huba Wass de Czege's understanding of Afghanistan and Iraq as operations requiring "perpetual security campaigns

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[45] McLamb, "Is It Time to Abandon the Military Decision-making Process?" 98.

[46] Ibid, 102.

[47] John Marr, "Designing the Victory in Europe," *Military Review* Jul/Aug (2011): 62.

in pursuit of desirable change, with no beginning or end-state" [48] represents senior leadership views

towards ADM applicability. These views contrast with the perception of political deadlines, end states,

campaign phases, and deployment time-lines that relate to the teleological characteristics of MDMP. The

disparity between doctrinal writers and end-users over design may have been avoided had GEN Donn

Starry's 1979 guidance that "operational concepts did not become doctrine until tested, approved and

accepted by the field Army force" occurred with ADM's introduction into doctrine. [49]

MAJ Eric Kobler supports Marr's assessment that insufficient field-testing contributed to the

Army's resistance in accepting design. Concerns related to utilizing and understanding the value of ADM

as a complementary planning methodology describes its greatest friction point. Field-testing new ideas

helps identify resistance that may impede acceptance by the force. Kobler discovered that "because of a

reasonable desire to avoid restricting the commander and his staff in how they applied the new aspects of

the operations process, overly prescriptive detail - which may assist in integrating conceptual planning

with detailed military decision-making – was intentionally left out of the new manual."[50] The introduction

of design into doctrine intentionally avoided prescriptive narratives describing its use and employment.

The lack of prescriptive narratives and emphasis on descriptive narratives caused the adverse effect

creating resistance. Failing to provide prescriptive application of design, the "tendency to discuss its

methodology with zealous propagandizing" increased reluctance to view MDMP as insufficient while at

the same time, "the field's experiments with the design methodology have not always lived up to the

billing."[51] Design's top-down driven introduction and descriptive narrative explain friction points that

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[48] Huba Wass De Czege, "Systemic Operational Design: Learning and Adapting in Complex Missions," *Military Review* Jan-Feb (2009): 4.

[49] Marr, "Designing the Victory in Europe," 62.

[50] Erik Kobler, "Bridging the Gap: Linking Conceptual Army Design to Military Decision-making," (Fort Leavenworth, KS: School of Advanced Military Studies, 2011), 5.

[51] Grigsby et al., "Integrated Planning: The Operations Process, Design and the Military Decision-making Process," 28.

have continued to eclipse the "advantages that the design methodology offer(s), and will go largely unrealized unless the force is convinced of its value."[52]

The step-by-step nature of the MDMP process makes it a more palatable tool for the US Army. ADM's lack of step-by-step characteristics contrasts with the reliance on step-by-step methodologies commonly found throughout the military. The military embraces step-by-step methodologies at all levels from the simplest task of loading a weapon to the most difficult task of joint planning at a theater level. A structure lacking step-by-step characteristics creates resistance by opposing the traditional linear characteristics of other methodologies. The reliance on checklist type processes shows a "customary and traditional way of thinking and doing things, which is shared to a greater or lesser degree by all its members."[53] The military utilization of step-by-step processes illustrates "distinctive social units possessed of a set of common understandings for organizing action."[54] These definitions of organizational culture help to explain resistance. MAJ Ben Zweibleson's assessment that "the Army's new design doctrine suffers from attempting to sidestep what is perhaps unavoidable for military doctrinal codification; namely to prescribe in doctrine a 'way of thinking' that cannot be expressed or contained within traditional military doctrinal form" supports this.[55]

Milan Vego believes that doctrine's failure to communicate an understanding of conceptual thinking stems from the actual terminology and words used to describe Systemic Operational Design (SOD). SOD represents a design methodology similar to ADM and will be discussed in more detail. For Vego, MDMP is good enough because the "vocabulary used by SOD advocates is essentially unintelligible and experience shows that no doctrine can be successfully applied unless all its elements are

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[52] Ibid, 29.

[53] Mary Jo Hatch, *Organization Theory* (New York: Oxford University Press, 2006), 177.

[54] Hatch, *Organization Theory*, 177.

[55] Ben Zweibleson,"To Design or not to Design Part 1," *Small Wars Journal* (2011), 2. http://www.dtic.mil/dtic/tr/fulltext/u2/a546333.pdf (accessed 20 April 2012)

written in clear and succinct language understandable to all."[56] Vego supports MDMP as good enough, because adoption of design "results in having two sets of terms – one for SOD and another for the traditional military decision-making process. Such a situation will be untenable and should never be allowed."[57]

Individuals who believe MDMP will continue to suffice, view all future combat scenarios as well-structured benefitting from lessons learned. This includes counterinsurgency operations, considered by some the poster child for ill-structured problems. GEN Peter Schoomaker's introductory comments discussing the value of FM 3-24, *Counterinsurgency,* to "provide techniques for generating and incorporating lessons learned during those operations – an essential requirement for success against today's adaptive foes" supports this.[58] Furthermore, Schoomaker states, "Most insurgencies follow a similar course of development … tactics used to successfully defeat them are likewise similar in most cases." [59] This idea erroneously generalizes the ill-structured problem of insurgency as belonging to a well-structured category. Statements that describe counterinsurgency as well-structured support the use of MDMP and disregard the need for problem identification.

FM 3-24, *Counterinsurgency,* a widely read manual, failed to reduce resistance to ADM, because it poorly articulated the integration of detailed and conceptual planning. FM 3-24 missed an opportunity to reduce resistance to ADM by acknowledging the need for a problem identification tool. Illustrating counterinsurgency solely through historical vignettes and environmental analysis portrays a well-structured problem. The vignette that describes command and control arrangements during Operation Provide Comfort as "Hand Shake Con," a non-doctrinal informal agreement for command and control

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[56] Milan Vego, "A Case Against Systemic Operational Design," *Joint Forces Quarterly* Issue 53(2009): 75.

[57] Vego, "A Case Against Systemic Operational Design," 75.

[58] FM 3-24: *Counterinsurgency* (December 2006), ix.

[59] Ibid, ix.

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purposes, oversimplifies the ill-structured problem of trying to achieve unity of effort.[60] Another vignette

singularly attributes the use of torture by the French Army in Algeria to the failed counterinsurgency

campaign conducted there from 1954 to 1962.[61] Characterizing ill-structured problems through singular

characteristics or events runs contrary to the very nature of ill-structured problems.

FM 3-24 promotes a "population centric" COG similar to the simplified enemy forces based

COG described previously. A population centric COG presented as a generic silver bullet for problem

identification oversimplifies counterinsurgency and bypasses the need for conceptual thought en route to

MDMP. Although FM 3-24 neglects specific discussions of MDMP in counterinsurgency, it advocates

utilizing fundamental aspects of MDMP. For instance, Intelligence Preparation of the Battlefield (IPB), a

core aspect of MDMP, receives an entire chapter of discussion. IPB describes empirical analysis of the

counterinsurgency environment to assist with decision-making.

FM 3-24 devotes an entire chapter to designing counterinsurgency campaigns and operations, but

poorly articulates how to integrate detailed and conceptual planning. FM 3-24 clearly advocates the

purpose of design, "to achieve a greater understanding, a proposed solution based on that understanding,

and a means to learn and adapt," but presents design as little more than intelligence preparation of the

battlefield (IPB), which is an understanding of the environment revisited.[62] A vignette to explain

Napoleon's 1808 occupation of Spain fails to impress the significance of problem identification and

merely supports the manual's base message of a population centric COG with IPB analysis of the

environment. This vignette creates a well-structured problem to summarize Napoleon's failure in Spain as

a "cultural miscalculation."[63] Napoleons failure in Spain accurately represents an ill-structured problem

where "cultural miscalculation" represents one dynamic amongst and related to other factors. FM 3-24

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[60] Ibid, 2-3.

[61] FM 3-24: *Counterinsurgency* (December 2006), 7-9.

[62] Ibid, 4-1.

[63] Ibid, 4-1.

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creates confusion for design by characterizing the relationship between planning and design as "qualitatively different yet interrelated activities" and separating design from planning.[64] The manual separates the two stating, "design inquires into the nature of a problem to conceive a framework for solving that problem … planning is problem solving, while design is problem setting."[65] Categorically separating design from planning rather than representing it as an essential component of successful planning implies that MDMP does not complement or support ADM. The value of design is unclear when described as a problem setting narrative outside of planning and problem solving. FM 3-24 essentially presents design out of context, as little more than environmental visualization and iterative learning separate from planning. Eight pages for an entire chapter that separates design rather than integrating it, describes an IPB-like result, and lacks prescriptive detail, leaves the reader returning to MDMP as good enough. Counterinsurgency operations provide a current and ongoing example of ill-structured problems. Additional descriptive discussion of ADM, a problem identification tool that facilitates planning for ill-structured problems, best applies to the Army's counterinsurgency manual.

William Gregor indirectly supports MDMP being "good enough" regarding the end-user characteristics. Gregor believes that "military commanders generally do not possess a wealth of experience dealing with social and economic policy, nor are they accustomed to thinking in those terms."[66] This generalization of officer skill sets as mechanistic and linear support using MDMP. Understanding of various academic and social science subjects differs drastically amongst individual officers within the military ranks. Officer educational focus post 9-11 reflects increased emphasis on social, economic, cultural, and inter-agency appreciation skills. Nevertheless, Gregor states, "It is extremely unlikely that the introduction of design in US Army planning doctrine will lead to greater military influence in policy making. Unfortunately, it seems hardly likely to improve military campaign

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[64] Ibid, 4-2.

[65] FM 3-24: *Counterinsurgency* (December 2006), 4-2.

[66] William D. Gregor, "Military Planning Systems and Stability Operations" *Prism* 1, No. 3 (2010): 109.

planning."[67] Gregor's analysis fits within the context of a continuation of well-structured problems typical of a defense against a Soviet Division Tactical Group. His analysis fails to fit GEN Martin Dempsey's, former Commanding General, US Army Training and Doctrine Command, prediction of a future environment requiring officers and leaders that "must expect and be prepared to confront a variety of complex problems, most of which will include myriad independent variables and all of which will include a human dimension."[68]

Promotions of general officers with academic backgrounds, new requirements within the Command and General Staff College for regional and cultural electives, and increased availability for master's degrees – particularly social science and business administration, provide evidence of the Army's active support for Dempsey's future predictions. A prediction of future environments bounded by the four trends of growing uncertainty, rapid change, increased competitiveness, and greater decentralization, will require officers familiar with various skills and "leaders with a more comprehensive approach to problem solving under conditions of complexity and uncertainty." [69] This future will find that MDMP is not good enough.

ADM Does Not Apply to What the Army Does

Extensive debate followed the introduction of design within US Army doctrine. Individuals who resist ADM argue it does not apply to what the Army does. Conceptual thinking forms the foundation of ADM. ADM does not introduce the idea of conceptual thinking, but emphasizes its importance. BG Edward Cardon and LTC Steve Leonard point out, "many of the concepts underpinning design are not

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[67] Ibid, 109.

[68] FM 5-0: *The Operations Process* (March 2010), Foreword.

[69] Ibid, Foreword.

new," primarily referring to the concept of conceptual or creative thinking.[70] Conceptual thinking always

existed with "intuitive senior commanders [who] have used the fundamentals of design to improve their

understanding of the operational environment, form teams of select individuals to assist in providing

analysis and advice, and leverage dialog and assessment to build learning organizations."[71] Conceptual

thinking, design's key component has always existed. Resistance to current methodology narratives

describing and implementing design demonstrates resistance to a concept already intuitively in use. This

author believes previous bias from critique of effects based operations (EBO) and Systemic Operational

Design (SOD) have generated misunderstanding and resistance for ADM. Negative critique against EBO

and SOD methodologies transfers to ADM resistance. The transference of negative critique from EBO

and SOD indicates a lack of understanding for both ADM methodology and the utility of conceptual

thought. In effect, opponents of ADM look to the failure of EBO and SOD to argue that ADM does not

apply to what the US Army does.

EBO and SOD pre-date the introduction of ADM. EBO and SOD provide problem identification

tools based on conceptual thought similar to ADM. EBO and SOD provide comparable methodologies to

understand resistance to ADM. Critique towards EBO and SOD reflect opinions that EBO and SOD do

not apply to what the Army does. Reviewing and understanding past critique and resistance toward EBO

and SOD as problem identification tools, helps to gain insights into current resistance toward ADM as a

problem identification tool.

EBO provides a problem identification tool based on understanding the operational environment

in the context of cause and effect relationships. The US Air Force developed EBO as a targeting

methodology for the selection and prioritization of targets. EBO provides targeteers a methodology to

select the most effective targets for interdiction in support of overall campaign objectives. EBO solved ill-

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[70] BG Edward C. Cardon and LTC Steve Leonard, "Unleashing Design; Planning and the Art of Battle Command," *Military Review* Mar/Apr (2010): 2.

[71] Cardon and Leonard, "Unleashing Design; Planning and the Art of Battle Command," 3.

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structured problems using complexity theory and holistic views. However, EBO failed to demonstrate utility for the US Army as a method to identify root causes or COG because of the weighted effect of human dynamics. The most significant rejection of EBO came from GEN Mattis, Commander, Joint Forces Command (JFCOM) stating, "that the term effects-based is fundamentally flawed, has far too many interpretations, and goes against the very nature of war to the point that it expands the confusion and inflates a sense of predictability far beyond that which it can be expected to deliver."[72] This rejection of EBO received support from individuals such as LTG Paul Van Riper who described EBO as "essentially conceptual nonsense, based on pseudo-science."[73]

Mattis identified positive cognitive and iterative characteristics within EBO that failed to gain traction. Positive factors such as "better understanding the history and culture of a society…other factors in the operational environment… using mission analysis to visualize and describe commander's intent… employing nodal analysis…conducting periodic assessments of operations to determine progress toward achieving objectives" failed to gain recognition as problem identification tools to complement decision-making. The critique that "EBO was fundamentally flawed and must be removed from our lexicon, training and operations" set the conditions for the failure of future conceptual thinking methodologies to gain acceptance.[74] Although EBO failed to gain acceptance within the US Army, "the Air Force successfully implemented a model of EBO based on structural complexity."[75]

ADM resistance links to US Army rejection of EBO "concluding in 2007, that the concept has no place in Army doctrine."[76] The rejection of conceptual-based thinking that supports holistic planning

[72] GEN James N. Mattis, "USJFCOM Commander's Guidance for Effects Based Operations," Joint Forces Quarterly Issue 51 (2008):107.

[73] Blog – "Mattis sparks vigorous debate on future of effects based ops" http://insidedefense.com/200808282338660/Inside-Defense-General/Public-Articles/mattis-sparks-vigorous-debate-on-future-of-effects-based-ops.html (accessed 20 April 2012)

[74] Mattis, "USJFCOM Commander's Guidance for Effects Based Operations," 107.

[75] Cardon and Leonard, "Unleashing Design; Planning and the Art of Battle Command," 3.

[76] Mattis, "USJFCOM Commander's Guidance for Effects Based Operations," 108.

advocates a "return to time honored principles and terminology that our forces have tested in the crucible of battle and that are well grounded in theory and nature of war."[77] Critique on the rejection of EBO, comes from individuals who recognize the value of EBO "to better understand cause and effect – to better relate objectives to the tasks that forces perform in the operational environment."[78] Carpenter and Andrews boil down EBO to a fundamental design tool that defines problems similar to "the five whys." This technique, iteratively asking the question why, over and over five times, seeks to determine root cause relationships. EBO personifies design as "a disciplined way to first understand the strategic objective, take a comprehensive look at possible courses of action, and then link tasks (through the effects they create) to that objective."[79] Both EBO and the signature design tool, "the five whys," attempt to define problems by looking at cause and effect relationships. The belief that EBO, a form of design, does not apply to military type problems, constitutes a failure to recognize that EBO "promotes a clear and detailed understanding of objectives" and "our first principle in war is the 'objective.'"[80]

Similar to Mattis' critique that certain aspects of EBO contain merit, MAJ Grant Martin advocates that some portions of ADM have merit, but doubts "the military doctrine on design takes advantage of the philosophy enough to truly give us an edge in complex environments."[81] Martin believes the military should experiment with aspects of design, similar to Mattis' identification of positive cognitive and iterative characteristics of EBO. Martin finds design not applicable to the military because it constitutes too drastic a cultural shift stating, "in the end, it would be too unsettling to our traditional

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[77] Ibid, 107.

[78] Paul M. Carpenter and William F. Andrews, "Effects Based Operations: Combat Proven," *Joint Forces Quarterly* Issue 52 (2009): 78.

[79] Ibid, 78.

[80] Paul M. Carpenter and William F. Andrews, "Effects Based Operations: Combat Proven," 80.

[81] Grant Martin, "A Tale of Two Design Efforts (and Why They Both Failed in Afghanistan)," *Small Wars Journal* (2011): 2. http://smallwarsjournal.com/jrnl/art/a-tale-of-two-design-efforts-and-why-they-both-failed-in-afghanistan (accessed 20 April 2012)

procedures and identity to usher in the philosophical change design requires."[82] Martin believes that

design does not apply to what the military does because ill-structured problems should not constitute the

realm of military operations. Martin's belief "that maybe one day our political masters will realize that the

military is not the tool to turn to when objectives are unclear, the environment is unfamiliar, and novel

approaches are required" supports this.[83] Martin identifies two factors in the application of design through

his experiences in Afghanistan that make ADM incompatible with the military. The first factor relates to

military culture and the second relates to military organization. The first cultural factor involves

participants "unwilling to address the major assumptions making up our logic underlying the entire

campaign."[84] Equal focus on the role of one's self in the environment, as well as the role of the people or

the enemy, "to understand not only what is driving the local people and the "enemy", but to understand

what is driving us as well."[85] Military culture resists challenging existing assumptions. Inability to

challenge existing assumptions creates an incompatibility for design efforts to "reframe" an existing

problem. The task and purpose received in a mission statement illustrates an initial assumption of a

problem statement that a design effort may attempt to reframe.

The second factor Martin identifies relates to the organizational nature of headquarters and staffs.

Design requires teams with varied experience and unique perspectives to be effective. Martin

acknowledges this by stating "design education had drilled into me the necessity for looking at problems

and the environment from as many perspectives as possible."[86] Design does not apply well to military

headquarters and staffs who traditionally lack variety created by input from external organizations. Martin

relates the difficulty in securing a variety of perspectives compatible with design efforts as "frustrating to

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[82] Ibid, 2.

[83] Martin, "A Tale of Two Design Efforts (and Why They Both Failed in Afghanistan)," 2.

[84] Ibid, 6.

[85] Ibid, 5.

[86] Ibid, 5.

be constantly surrounded by not only American officers, but American officers assigned to the same HQ."[87] The homogenous nature of US Army headquarters provides the resistance that prevents ADM from applying to what the Army does.

The history concerning SOD's attempt to integrate follows similar critique concerning its applicability to what the Army does. Blog comments from the force concerning SOD provide harsh criticism and evidence of resistance. Comments following the article "Operational Design in Afghanistan" describe SOD as "an empty academic exercise in post-modernist planning theory."[88] Comments continue, stating SOD "may be fine for folks writing highly esoteric articles in planning and philosophy publications, but it simply confuses and confounds the ability of a military leader and staff to address the issues at hand."[89] These comments best summarize the harsh negative attitudes from the force that SOD, like EBO, fails to apply to what the Army does. The failure of SOD to gain traction within the Army, similar to the failure of EBO, explains current resistance to ADM as yet another inapplicable design methodology.

The strongest criticism of SOD comes from Milan Vego. Vego begins his critique against SOD by categorizing it alongside EBO stating "the military seems well on its way to repeating its dismal experience with an effects based approach to operations by adopting major parts of SOD." [90] Vego rationalizes his critique against SOD by comparing it to EBO as resting on "dubious foundations," and pointing out "it clearly failed when it was put into practice by the Israeli Defense Forces (IDF) in the Lebanon conflict in July of 2006."[91] Vego assigns blame for the IDF's failure to achieve a decisive

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[87] Ibid, 6.

[88] Operational Design in Afghanistan Blog, comment posted Nov 29, 2009, http://smallwarsjournal.com/blog/operational-design-in-afghanistan (accessed 20 April 2012)

[89] Operational Design in Afghanistan Blog, comment posted Nov 29, 2009, http://smallwarsjournal.com/blog/operational-design-in-afghanistan (accessed 20 April 2012)

[90] Vego, "A Case Against Systemic Operational Design," 69.

[91] Ibid, 69.

victory as "overreliance on airpower and modern technology in general and dogmatic application of the US concept of EBO, and not least of all SOD." [92] Vego separates EBO and SOD as two distinct methodologies. Vego identifies EBO as a methodology intended for targeting, while SOD focuses on "staff work methodology, battlefield analysis, and the structure and contents of orders."[93] Vego loses track of the overall purpose of SOD and EBO methodologies while analyzing and characterizing them. The purpose of utilizing conceptual thought in a holistic manner supports defining a problem, the purpose of SOD, EBO and ADM.

Ironically, Vego critiques the IDF leadership for their failure to understand the new doctrine while demonstrating a lack of understanding for both EBO and SOD's overall value regarding military planning. Vego understands that "design should ensure one's forces are employed in a logical and coherent manner and are focused on the assigned operational and strategic objectives."[94] Vego fails to realize that SOD helps realize and define the operational and strategic objectives. SOD realizes this through conceptual thought looking holistically at an environment to identify centers of gravity (COG) outside the limited framework of enemy forces. Vego clearly understands enemy forces only constitute one aspect of the environment, stating, "Operational commanders and their staffs must take non-military aspects of the situation fully into account because they compromise the framework dictated by policy and strategy." [95] Vego fails to see how design thinking and a holistic approach take the non-military aspects of the situation into account for the statement of COG.

COL's William Pierce and Robert Coon advocate a broader view of the environment that does not exclusively link mission accomplishment with identification and neutralization of a COG. Vego's overreliance on the importance of COG as rationale for rejecting SOD fails to understand Pierce and

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[92] Ibid, 72.

[93] Vego, "A Case Against Systemic Operation Design," 72.

[94] Ibid, 74.

[95] Ibid, 74.

Coon's assessment that "identifying and neutralizing a COG is a step toward mission accomplishment. Operational planners must understand the adversary leader's mind and world view."[96] Although Pierce and Coon do not apply EBO, ADM or SOD doctrine to their discussion of COG, they effectively show that mission accomplishment requires more than just neutralizing a COG. It requires ensuring "the adversary leader can understand the physical, functional and systemic effects the coalition achieves."[97] Utilizing conceptual thinking to define the "relationship between the COG and mission accomplishment is complex and understanding it is a critical step in the joint operation planning process."[98]

Vego believes COGs focused on the enemy do not change. Vego's belief that enemy centric COG's remain constant justifies his invalidation of SOD as a useful methodology for the military. Vego's statements that the "center of gravity is determined at the beginning and remains more or less fixed" and "SOD assumes a continuous shifting and reframing of the design for a campaign …this is erroneous thinking," express his belief that SOD, and consequently ADM, do not apply to what the military does.[99] According to Vego, "SOD does not apply because only drastic changes in the environment and situation require reevaluation of objectives and centers of gravity."[100] This identifies a belief that Vego sees all military problems as well-structured problems, once he identifies the center of gravity.

Vego's view of all military problems, as well-structured problems, originates from his view that reframing military operations in support of political objectives exceeds military responsibilities in planning. This view relieves military officers of the responsibility to use design to understand the

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[96] COL William Pierce and COL Robert Coon, "Understanding the Link between Center of Gravity and Mission Accomplishment", *Military Review* May-June (2007): 83.

[97] Pierce and Coon, "Understanding the Link between Center of Gravity and Mission Accomplishment," 83.

[98] Ibid, 83.

[99] Vego, "A Case Against Systemic Operation Design," 74.

[100] Ibid, 74.

environment, define the problem or conduct reframing of the problem as needed. Vego's perception "that the heart of the operational design is the operational idea (scheme)" does not allow for commanders to impact the operational design he defines as "the desired strategic end-state, ultimate and intermediate objectives, force requirements, balancing of operational factors against the ultimate objective, identification of the enemy and friendly centers of gravity" with conceptual thought. [101] Vego puts forth the idea that the strategic end state put forward by political leadership easily translates to strategic and operational objectives. Strategic and operational objectives provided by political leadership should not require conceptual thought to realize:

> SOD clearly violates some of the most important tenets of sound operational planning. Regardless of the scope and complexity of a problem, logic and common sense dictate that one should always start with what ultimately must be accomplished. Traditional operational planning is based on a so-called regressive or inverse process, in which the starting point is the ultimate objective of a campaign or major operation. For a campaign intended to end hostilies, the starting point for planning should be the desired strategic end state as expressed in the guidance issued by the political leadership. *[102]*

Military officers can facilitate or obstruct national objectives by their ability to understand the operational environment. Defining the operational environment with a problem identification tool impacts the military's ability to achieve the end state. The end states described in political guidance rarely translate easily to operational and strategic objectives. The capture of Baghdad, along with Saddam Hussein, originally expressed in the overall OIF mission statement did not come to define mission accomplished. This example illustrates a missed opportunity for problem identification that may have impacted strategic end states for national policy, making ADM very applicable for what the military does.

Vague or incorrect guidance generates military planning as readily as insightful and accurate guidance does. Failing to recognize the need for a problem identification tool, fails to recognize the reality

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[101] Vego, "A Case Against Systemic Operation Design," 74.

[102] Ibid, 74.

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of ill-structured problems where vague guidance requires robust conceptual thought. Robust conceptual

thought determines the ways and means to achieve desired ends when guidance is vague. COL John A.

Kelly relates an OIF example necessitating the ability to utilize design for problem identification. The

commander of Second Brigade Combat Team (2BCT) of the 101st Airborne Division, COL Todd Ebel,

received very little guidance from his higher headquarters. The guidance from Multi-National Corps Iraq

Commander, LTG Peter Chiarelli, called for COL Ebel to simply "get South Baghdad under control."[103]

The reality of this vague, non-specific objective "leaves the onus of conceptual planning to the BCT

Commander and the BCT Operations Officer."[104] Kelly acknowledges the Advance Military Studies

Program (AMSP) as the singular source of ADM instruction for the Army. According to Kelly, COL Ebel

attributed his success in South Baghdad to the aspects of design, with a holistic understanding of his

environment to develop suitable commander's intent for 2BCT. Ebel evidences the importance of training

officers in design and its applicability admitting, "that due to the lack of experience and AMSP

knowledge in the BCT plans cell this process was not as efficient as it could have been."[105] Kelly's 2BCT

example shows the value of ADM in a complex environment requiring conceptual thought for problem

identification. Vego's assertion that the military simply acts upon the guidance of political leaders "where

the desired strategic end state provides a sufficient framework" neglects the reality of vague guidance and

demonstrates that ADM truly applies to what the Army does.[106]

To resist ADM, along with EBO and SOD, "for the well proven traditional operational planning

process" calls for an environment where campaign planning and operational art exist as troop leading

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[103] COL John A. Kelly, "Brigade Combat Teams: Designed to Design" (Ft. Leavenworth, KS: School of Advanced Military Studies, 2011), 3.

[104] Ibid, 3.

[105] Kelly, "Brigade Combat Teams: Designed to Design," 4.

[106] Vego, "A Case Against Systemic Operation Design, 74.

procedures.[107] The view of troop leading procedures at a grand or national level removes the need for

problem identification through conceptual thought. The military's responsibility for problem

identification ends with identifying the mission's essential task within a mission statement. LTC Thomas

Clark concisely articulates the fallacy that "MDMP exercises will somehow lead to competent problem

identification simply is not prudent. We can only gain by instituting a systematic workable problem

identification process." [108]

If Vego could re-envision "centers of gravity through an EBO prism, which will provide a bridge

during the transformation from the mechanical strategy to task approach of the cold war to the network

structured practice of effects based operations in the 21st century" he would find the applicability of

problem identification through conceptual thought that SOD, EBO and ADM provide to operational

planning.[109] ADM supports the spirit of centers of gravity as "the essence of operational art lies in being

able to produce the right combination of effects in time, space, and purpose relative to a COG to

neutralize, weaken, defeat, or destroy it. In theory, this is the most direct path to mission

accomplishment."[110] When problem identification leads to mission accomplishment, ADM demonstrates

applicability for what the Army does.

Recommending Six Sigma DMAIC Methodology

American corporate industry recognizes the value of problem identification. The Six Sigma

DMAIC methodology of problem solving combines both decision-making and problem identification into

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[107] Ibid, 74.

[108] LTC Thomas G. Clark, "Army Planning Doctrine: Identifying the Problem is the Heart of the Problem" Military Review Nov-Dec (2007): 76.

[109] MAJ Robert Umstead and LTC David R. Denhard, "Viewing the Center of Gravity through the Prism of Effects Based Operations" *Military Review* Sep-Oct (2006): 95.

[110] JP 5-0: *Joint Operation Planning* (December 2006), IV-9.

a single linear process.[111] Six Sigma DMAIC's importance to military planners is that it provides an example of both problem identification and decision-making. Six Sigma DMAIC integrates the decision-making qualities of MDMP and the problem identification qualities of ADM into a single linear process that solves both well-structured and ill-structured problems. Six Sigma DMAIC reduces confusion about when to integrate problem identification by requiring the use of problem identification tools as the first step to define the problem.

DMAIC, an acronym for define, measure, analyze, improve and control, consists of a linear step-by-step process that originated in 1986 from Motorola. Numerous Fortune 500 companies, most notably the General Electric Company, utilize Six Sigma DMAIC. Six Sigma represents an aspect of the overall process using statistical analysis during the "analyze" step to determine defect rate. A sigma level six rated process indicates a goal of fewer than 99.99966% defects. DMAIC seeks to identify inefficiencies and new opportunities for success that restructure existing business strategies and chart new business models for expanded profitability. Restructuring business strategies and charting new business models require planning. Corporate planning, just like military planning, constitutes problem solving. The "define" step provides the conceptual component responsible for problem identification. Measure, analyze, improve and control provide the decision making tools that lead to detailed planning.

Product output along a manufacturing line constitutes a well-structured problem in the business world. Increasing customer satisfaction within a service based industry centered on individual human interaction constitutes complex and ill-structured problems in the business world. By effectively integrating conceptual and detailed planning in a structured format conducted by individuals or teams, DMAIC provides a methodology to conduct problem solving and planning for business. DMAIC allows business leaders to improve the manufacturing profitability of jet engine components along a factory line. DMAIC also allows business leaders to increase individual customer satisfaction within a call center

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[111] Cygi et al., *Six Sigma for Dummies.*

consisting of thousands of individual call center representatives.

The DMAIC process follows sequential steps that allow transfer of ideas between individuals and groups. The DMAIC steps utilize a formatted common process with known tools and terminology. The DMAIC process relies heavily on the use of standardized design tools to enhance conceptual thinking. A military planner introduced to the DMAIC processes would immediately find striking similarities between DMAIC and MDMP. Both processes follow procedural steps in a linear process segmented into supporting sub-steps. Both processes deliver recommended courses of action to decision makers based on an understanding and analysis of environmental factors.

The most significant difference between DMAIC and MDMP occurs with the "define" step. The measure step of DMAIC corresponds closely to mission analysis. The analyze step corresponds closely to course of action development and course of action comparison. The last two steps of DMAIC, improve and control, strongly correspond to the remaining steps of MDMP, course of action selection, war gaming and orders production. Define provides a unique step to benefit MDMP through its addition. The define step "is about recognizing the problematic areas of the business and subsequently creating a clear direction for resolving these problematic areas."[112]

DMAIC, conducts business planning with a 4-step process segmented into 12 sub-steps. DMAIC, unlike MDMP, starts with a blank slate in regards to defining the problem. DMAIC does not pre-suppose a solution or end state that implementation of a traditional task and purpose mission statement suggests. MDMP does not provide a mechanism requiring planners to define the problem. DMAIC requires design through conceptual thinking to occur by maintaining as an ideological foundation that no solution can be anticipated or pre-supposed. Pre-supposing a problem generates solutions with initial bias that may prevent the DMAIC planner from realizing a critical opportunity or necessary factor that leads to a previously unrealized innovation or improvement. This aspect of DMAIC provides the model to

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[112] Cygi et al., *Six Sigma for Dummies,* 63.

transform MDMP to this authors vision of an MPP described earlier. The "define" step seeks to identify the problem by asking questions, "What is the actual problem? Where is the problem occurring? Over what time frame has this problem existed? Finally, define asks, who is the customer most affected by the problem?"[113] The heart of defining the problem consists of determining where the pain is located and who constitutes the customer.

The customer best describes "the individual that benefits from an improved state caused by relief from the pain the problem causes."[114] Black Belts utilize design tools such as process maps, the five whys, affinity diagrams, and fishbone diagrams to discover and define the problem. The define steps develop a team charter that quantifies the scope of the project and the resources required to meet the demands for further analysis. Define utilizes tools aimed directly at gathering information about the problem and creating a picture of the "pain" experienced by a corporate process or by the customer serviced. Define utilizes the concept of Customer to Quality (CTQ's) to express the factors pertaining to the problem. CTQ's represent the aspects of the problem a solution must address. The most significant CTQ consists of the project y. The associated CTQ's consist of project x's.

FM 5-0 suggests conceptual thinking through design is an option commanders may or may not choose to utilize. A corporate team utilizing DMAIC only receive guidance identifying a problematic area of the business and a desire by leadership to initiate a project. In military terminology, the DMAIC planner receives a "purpose" by which a mission statement (business statement) develops to identify a need to conduct DMAIC and properly define the problem. The business problem created through the "define" step, following the business statement, articulates the project that planners attempt to solve. DMAIC planners develop a course of action (improved business strategy) through the statistical analysis of the critical x's that impact the overall critical y, in order to recommend a desired.

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[113] Ibid, 73.

[114] Interview with Van Baker, General Electric Master Black Belt.

Within DMAIC, a project y, is a dependent variable that represents a project output or solution (mission end-state) requiring implementation. Determining y's corresponds to a need or requirement addressed by the customer. Every project y consists of associated independent variables, x's, impacting a particular y. Similar to a military operation having multiple specified and implied tasks, a DMAIC project can have multiple y's with the critical y analogous to the mission essential task. Critical x's represent specified and implied tasks associated with the mission essential task. Mathematically described as $y=f(x)$, this function attempts to understand all the variables within an environment and their associated impact on a desired end state. Y's determine the application of conceptual thinking stemming from the use of design tools.

The final output of the define step consists of a project charter. A project charter consists of a one page summary identifying the project y and project x's derived from utilizing conceptual design tools to understand the problem, identify the problem, and articulate the desired end state. The charter lists the team members whose contributions and expertise impact the overall project and receives approval from a business leader or decision maker to begin the actual project. The creation and approval of a charter leads to the next step of DMAIC, measure and analyze, similar processes to mission analysis and IPB.

This author's vision for MPP differs from MDMP by inserting a define step between "receive the mission" and "mission analysis" steps. The MPP define step creates an opportunity to define the problem and utilize conceptual thinking tools before conducting mission analysis. Operational planners can create a project charter outlining the critical y and critical x's that mission analysis further develops. Operational planners can develop a charter identifying the perceived problem along with identifying the individuals on the planning team for approval by the commander.

The following example illustrates the importance of selecting an appropriate critical y without the bias of pre-supposed solution. A platoon leader receives a mission to secure a bridge. Through analysis utilizing the design tool, the five "whys," the platoon leader determines his critical y constitutes preventing enemy forces from utilizing the bridge. The platoon leader realizes the hilltop overlooking the bridge constitutes terrain that facilitates control over the bridge, a critical x. The platoon leader correctly

defines his problem as the conduct of a defense along the nearby hilltop in order to secure the bridge. The platoon leader then conducts mission analysis of the terrain on the nearby hilltop in order to ensure the best defensive course of action plan. This simplified version of a define step utilized during MDMP to create MPP shows the impact of define. The detailed plan developed to solve the mission statement, secure a bridge, addresses the correct problem, defending the nearby hilltop overlooking the bridge. Correctly defining the problem provides an opportunity to ensure that planners implement solutions for the correct problem.

Conclusion

ADM as a problem identification tool developed from a top down process in Army doctrine to provide problem identification tools that complement decision-making tools for ill-structured problems. The US Army's future operating environment will consist of both well-structured and ill-structured problems. Ill-structured problems resist simplification to well-structured problems utilizing COG or narrow mission analysis frames. The requirement to plan for ill-structured problems requires the US Army to utilize problem identification tools. Problem identification tools assist in defining and understanding ill-structured problems to allow for decision-making and detailed planning accomplished by MDMP.

Correctly defining a problem is the foundation of military planning. An incorrectly identified problem is tantamount to a defective keystone in building the detailed plan. During practical application MDMP steps get skipped due to time constraints and lack of enthusiasm. The effectiveness of a define step to force integration of a problem identification tool rests on reducing the confusion about what ADM does. ADM is a problem identification tool utilizing conceptual thought for ill-structured problems. A coordinated effort across doctrine, organization, training, materials, leadership, personnel and facilities (DOTMLPF), however difficult, provides the roadmap to reducing confusion on ADM as a problem identification tool.

Resistance to ADM comes from current and historical reliance on MDMP. MDMP's past success,

integration throughout doctrine, and utilization during training makes it an indispensable part of how the Army fights. The preponderance of well-structured problems indicative of conventional military operations strengthens the view of MDMP as "good enough". US Military experiences with counterinsurgency and stability operations post 9-11, trend toward an increase in ill-structured problems that MDMP continually seems ill-equipped to handle. Confusion concerning the role of a problem identification tool provided by ADM lead many critics to believe that ADM does not apply to what the Army does.

The same challenges faced by the Army in reducing the confusion about the value of a problem identification tool, and integrating its use have been overcome by a multitude of corporations across various industries utilizing Six Sigma DMAIC methodology. The "define" step's addition to the Six Sigma DMAIC process resulted after numerous black belts continually traced the failure of projects to deliver increased profitability to erroneously defined or inconsequential business problems. Advocates of ADM understand that detailed planning for erroneously defined or inconsequential problems impacts a vastly more significant bottom line than profitability for the military.

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